

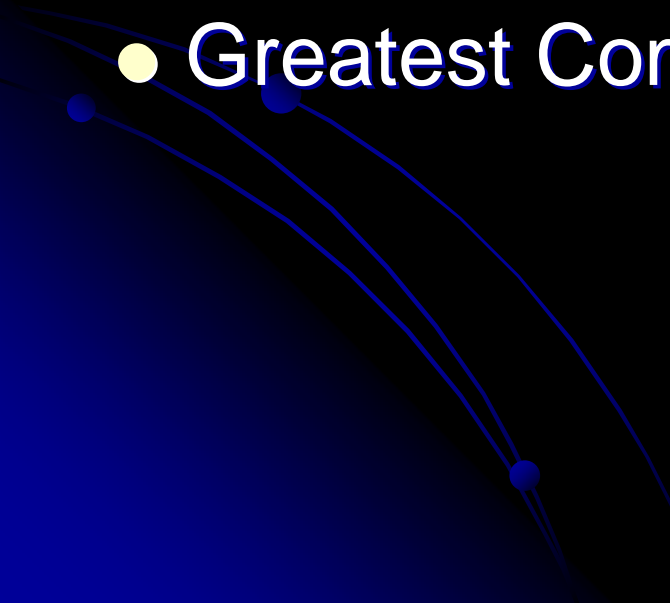
RET AT ND

Number Theory Exploration




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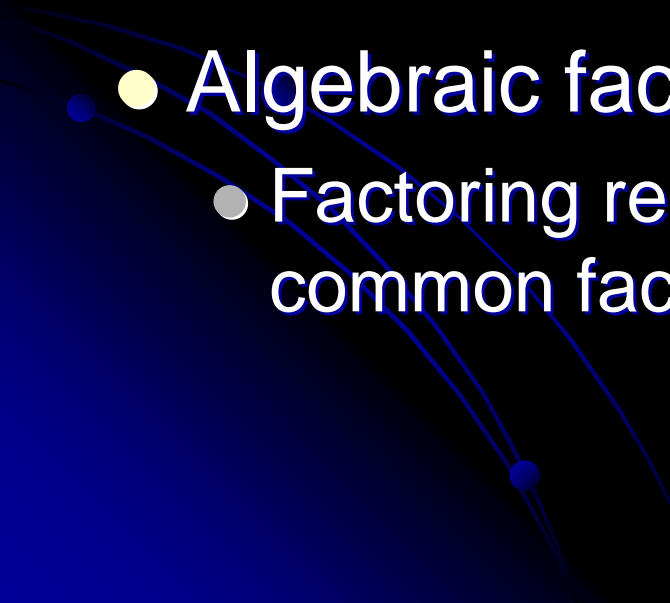
Intriguing Experience

- Mathematical groups, rings, fields
 - Polynomials
 - Greatest Common Factor
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Investigation

- Investigation of number sets.
 - Traditional method
Prime Factor Tree
 - Newly Discovered method
The Euclidean Algorithm
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Connection

- Curriculum Connection
 - Abstract perspective
 - Algebraic factoring
 - Factoring requires knowledge of the greatest common factor
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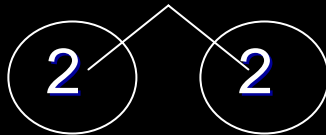
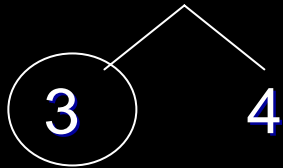
Application

- Factoring polynomials
 - A1.6.6 Find a common monomial factor in a polynomial.
 - A1.6.7 Factor the difference of two squares and other quadratics.
 - A1.8.2 Solve quadratic equations by factoring.
- Traditional method
 - Prime Factor Tree
- New and Improved Method
 - Euclidean Algorithm

Example

Prime Factorization

12



Prime Factorization

$2 * 2 * 3$

$3 * 11$

Greatest Common Factor

3

Euclidean Algorithm

12 and 33

$$33 / 12 = 2 \text{ r } 9$$

$$12 / 9 = 1 \text{ r } 3$$

$$9 / 3 = 3 \text{ r } 0$$

Thus Greatest Common
Factor is 3

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